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Evaluation of Efficiency of CT scan and FAST Scan in Patients with Blunt Trauma Abdomen.

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Objective: The main aim of this study was to find the efficiency of CT and Fast scan in patients who present in emergency department with blunt trauma to the abdomen.

Place and Duration of Study: This study was carried out in Jinnah hospital Lahore in a duration of 7 months from January 2019 to July 2019.

Material and Methods: Patients presenting in the emergency with blunt trauma to the abdomen and who were vitally stable were included in this study. After giving initial trauma protocol patients were sent for CT and Fast scan along with routine investigations. Upon finding a positive sign either in CT or FAST scan patients were informed about the study and consent was taken. Patients were first sent for FAST scan which was followed by CT scan. Patients with negative scans were excluded from this study. X-ray of the abdomen and chest were also obtained to rule out other abnormalities. CT scan was obtained in all these patients even if negative results were seen in patients.

Both scans were obtained in all these patients even after abnormalities were seen on FAST scan. Along with analyzing all the organs, the main focus was kept upon the presence of free fluid in abdomen and pelvis. NG tube was passed to decompress the stomach to remove the air. Oral and IV contrasts were given for better results. Having the suspicion of renal injury, delayed scan was performed. The patients in which any fluid or visceral injury was seen in abdomen, were labeled as positive and in which no findings were seen were labeled as negative.

Results: A total of 56 patients were included in this study having 12 females and 44 males. 18 to 40 years was the most common age group who presented in emergency.

Trauma was most commonly due to RTA 58.9% which was followed by fall from height 32.1%. Sports injuries included 7.1% and history of fight 0.18%.

Organs which were most commonly injured included 73.2% liver, kidneys in case of 46.4%, spleen 51.8% and pancreas 12.5%.

Both CT and FAST scans were done in these 56 patients. In 49 (87.5%) positive findings were seen with FAST scan but it was missed in 7 (12.5%) of the patients and findings were missed only in 1 (1.8%) case with CT scan.

On the basis of fluid, hemoperitoneum was classified in 3 groups i.e. mild, moderate and severe. Presence of fluid only in one space with fluid quantity about 100-200 ml was labeled as mild. Moderate was defined as presence of fluid in 2 pelvic spaces with fluid quantity of about 250-500ml. Presence of fluid in all spaces with quantity exceeding 500 was labeled as gross.

Keywords: CT scan, FAST Scan, Blunt Trauma Abdomen

Introduction: Increasing traffic is a significant source of road traffic accidents which is increasing the mortality and morbidity. Early shifting of the patient, detection of injuries and prompt treatment decreases the mortality rate.

Motor vehicle accidents are one of the leading causes of blunt trauma to the abdomen which presents in emergency. This blunt trauma, unlike penetrating injury leads to unclear decisions

without investigations. Multiple investigations are used for diagnosing the internal injuries which include FAST scan, CT scan and diagnostic peritoneal lavage.

History and physical examination have a little role in blunt trauma of the abdomen and there are limitations with the DPL because it cannot be used in pregnant women and in patients who presents with poly trauma.

FAST scan is now used all over the world and is an important part of ATLS protocol. Free fluid can be



detected with FAST scan which can be blood or gastric content. There are limitations with FAST scan because the accuracy depends on the person doing FAST scan and upon the resolution of the machine. Along with these, retroperitoneal injuries, blunt bowel or mesenteric injuries can be easily missed.

Now a days, CT scan has become gold standard in case of blunt trauma to the abdomen because of its high sensitivity and specificity and imaging time has been significantly reduced with the invention of multi detector CT scan.

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Discussion: Most of the cases of blunt trauma are caused by RTA. Mostly hollow viscera are affected along with liver, kidney and spleen. 4%-15% injuries of colon has been seen. Visceral injuries have to be operated at all cost and they can be missed easily on FAST scan. The specificity and sensitivity of FAST scan has been shown around 95-100% and 63-100% according to different studies.

18-40 years was the mean age group in our study. This is because of the reason that fast driving is seen in this age group. 49 cases among 56 were found to be positive with FAST scan while 7 were missed. Limitations of FAST scan are attributed to the presence of subcutaneous emphysema, bowel gas and obesity which hinders USG. Volume present in abdomen is also a limiting factor. The least amount of fluid to be detected in abdomen has been shown to be 619 ml in Morison pouch by Branney and his colleagues.

Liver was the most commonly affected organ which was followed by kidney, spleen and pancreas. For grading liver injury, CT scan is the gold standard. Small bowel injuries can be detected with the help of multidetector CT scan. CT scan is superior to FAST scan in diagnosing as shown in our study. Similar findings were reported by Vadodariya et al in his study.

There are limitations with both these tests and false negative results can be obtained. Rupture of diaphragm and retroperitoneal injuries cannot be detected by FAST scan. For CT scan a huge amount of experience is needed and is not safe in unstable patients. Along with these problems, high amount of radiations given by CT scan can limit its capabilities.

Conclusion: CT scan has an upper hand in detecting abdominal injuries compared to FAST scan. Despite the beneficial effects, some critical injuries can be missed on FAST scan in which exploration is needed. If the condition of patient allows then CT should be performed along with USG abdomen.



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